H 89/982

Hungry Horse

LIBRARY

NOV 3 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

READEX FICHE

I27.2:

Hungry Horse is a key project in the U.S. Department of the Interior's long-range program for multiple-purpose water resources development in the vast Columbia River drainage basin.

Hungry Horse Dam and Powerplant, authorized in 1944 and completed in 1953, were constructed by the Bureau of Reclamation on the South Fork of the Flathead River in northwestern Montana.

The project was authorized to help prevent the recurring spring floods on the Columbia and Flathead Rivers and to help alleviate the annual winter power shortage in the Pacific Northwest.

Power

The Hungry Horse Project generates hydroelectric power which benefits a region from the Continental Divide west to the Pacific Ocean.

The dam stores water during the spring flood season for release when needed during the fall and winter. As the water passes through each dam and powerplant along the Columbia River System—from Hungry Horse in Montana to Bonneville in Washington State—it is used to generate power. In an average year, this water will generate about 4.6 billion kilowatt-hours of electricity as it travels through the system.

The powerplant's four generators produce an average of 1 billion kilowatt-hours of electricity annually. Much of this is "peaking" power, which is used to meet demand during high-use periods. A transmission system delivers the energy to the Bonneville Power Administration for marketing.

Flood Control

Hungry Horse Dam contributes significantly toward controlling floods on the Columbia River. The dam helps minimize floods in the Flathead Valley. It reduces peak discharges between the valley and Grand Coulee Dam by 10 to 25 percent and at Portland, Oregon, by about 5 percent. Hungry Horse Reservoir has a storage capacity of approximately 3 million acre-feet which can be used for flood control.

Cover: The Great Northern Mountain towers 8,700 feet above the reservoir.

Hungry Horse Dam and Reservoir

Hungry Horse Reservoir is ideal for boating and fishing.

Recreation

The reservoir offers excellent opportunities for fishing, boating, water skiing, and swimming. The surrounding mountains are popular big-game hunting areas. The U.S. Forest Service administers the recreational development of the reservoir area and has constructed many campgrounds and picnic areas around the reservoir.

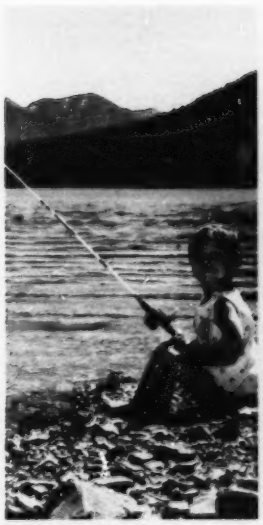
One of the World's Largest Dams

At the time of completion in 1953, Hungry Horse Dam was the fourth largest and fourth highest concrete dam in the world. The dam, an arch-gravity-type structure, has a crest 2,115 feet long. The crest elevation is 3,565 feet above sea level.

Spillway and Outlet Works

The spillway, at the time of its completion, was the largest "morning-glory" structure in the world. The facility, shaped somewhat like a morning glory flower, collects water just upstream from the dam, carries it through bedrock under the dam's right abutment, and returns it to the river approximately 550 feet downstream from the dam.

To control the operation of the reservoir when the water drops below the spillway crest, three outlet pipes are installed in the dam. Each pipe is 660 feet long and 8 feet in diameter, with a maximum discharge capacity of 4,680 cubic feet per second. Water flows into the outlet pipes in the upstream face of the dam 365 feet below the crest and discharges through a valve house on the right bank of the river, downstream from the powerhouse and dam. The discharge is controlled by hollow-jet valves.



Powerplant and Switchyard

The turbines and generators are housed in a reinforced concrete building constructed across the river channel at the downstream toe of the dam. Four large, vertical-shaft generators are turned by four turbines below the generator floor. Four penstock entrances in the upstream face of the dam carry water to the powerplant. With generators operating at maximum capacity, over 80 tons of water passes through each turbine every second.

The switchyard is located in the canyon 1,200 feet downstream from the dam. High-tension lines carry the power from the transformers, located on the downstream deck of the powerhouse, to the switchyard.

Reservoir

The dam forms a reservoir approximately 34 miles long, with a maximum width of 3½ miles. The reservoir capacity is nearly 3.5 million acre-feet—equivalent to about 5,000 gallons for each person in the United States. The maximum depth of the reservoir is 50 feet, and its surface area is 37 square miles.

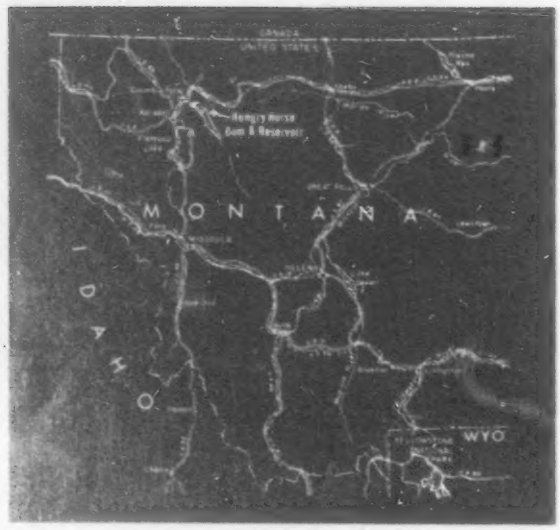
Fishing is enjoyable to all ages, as evidenced by the big smile on this young angler.

These generators supply an averge of 1 billion kilowatt-hours annually.

A Sound Investment

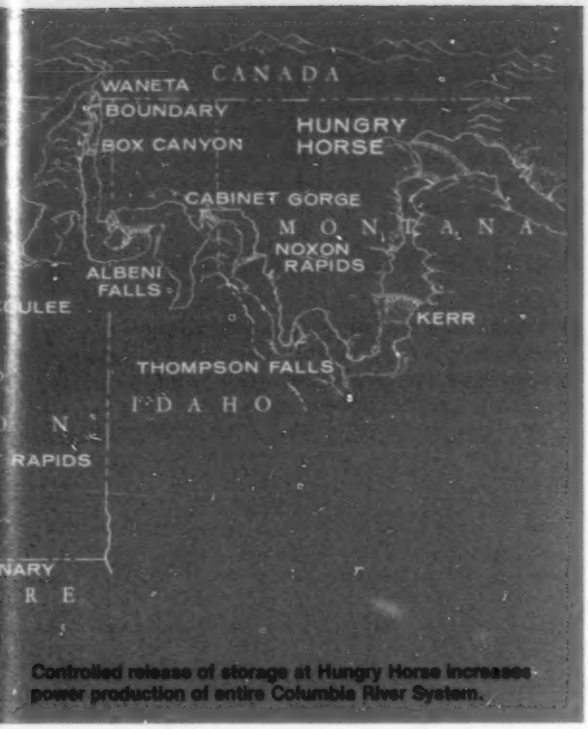
The cost of the Hungry Horse Project was $102 million. Except for $24.6 million allocated to flood control and navigation, the entire project cost will be repaid to the Federal Treasury, with interest, through the sale of hydroelectric power. Just over 1.1 billion kilowatt-hours of electricity was generated at Hungry Horse in fiscal year 1981.

Commercial power produced at the dam repays the largest portion of project costs. Downstream plants also repay shares of the cost, in recognition of the benefits they receive through the use of Hungry Horse water storage.



Hungry Horse	
Powerplant capacity (nameplate)	285,000 kW
4 generators	71,250 kW each
4 turbines	105,000 hp each
4 penstocks	13.5-ft diameter each
Height	564 feet
Length of crest	2,115 feet
Width at top	39 feet
Width at base (maximum)	330 feet

The dam and reservoir are located high in the Rocky Mountains, less than 30 miles from the Continental Divide, and are surrounded by more than 25 mountain peaks.



Controlled release of storage at Hungry Horse increases power production of entire Columbia River System.

INSTALLED GENERATING CAPACITY	NAMEPLATE RATING IN KILOWATTS	
Project	Existing	Ultimate
Hungry Horse	285,000	385,000
Kerr	168,000	
Thompson Falls	30,000	65,000
Noxon Rapids	396,880	
Cabinet Gorge	200,000	
Albeni Falls	42,600	
Box Canyon	60,000	
Boundary	551,000	826,500
Waneta (Canada)	292,500	
Grand Coulee	6,280,000	8,880,000
Chief Joseph	2,069,000	2,241,800
Wells	774,300	
Rocky Reach	1,213,150	
Rock Island	622,500	
Wanapum	831,250	1,330,000
Priest Rapids	788,500	1,261,600
McNary	980,000	1,625,000
John Day	2,160,000	2,700,000
The Dalles	1,807,000	
Bonneville	518,400	1,076,600

The Naming of Hungry Horse

An often-told local story relates the ordeal of two draft horses lost in the rugged Montana wilderness. Tex and Jerry pulled logging sleighs in the Flathead River's South Fork area. During the severe winter of 1900-01, they wandered away from their sleigh and struggled for a month in belly-deep snow, unable to find food. Gaunt and weak, they were found, prompting the observation that this was "mighty hungry horse country." Tex and Jerry were revived—and the name stuck.

The name "Hungry Horse" was given to a mountain, lake, and creek in the area and later to the dam and town located a short distance downstream.

Visitors

The public is welcome at the Hungry Horse Project. Free self-guided tours of the dam and powerplant feature an animated display and tape-recorded talks.

A 30-foot-wide highway across the crest of the dam is open to public travel.

Except in winter, visitors may travel completely around the 34-mile-long reservoir over nearly 115 miles of Forest Service roads.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

PF151
PAPN30M0782

o U.S. GOVERNMENT PRINTING OFFICE: 1982—576-128/7